

REMARKS

Reconsideration of the subject application as amended herein is respectfully requested.

As previously discussed, the present application pertains to a novel digital camera module. As shown in the Figures, the module includes a substrate with an image sensor 3, a housing 2 and a barrel 10 with a plate 11 and a lens. The barrel 10 is preferably threadedly attached to the housing 2. The plate 11 is permanently attached to the barrel 10, for example, with an adhesive. The plate is flat and has a surface area that is preferably smaller than the area of the top barrel surface that it covers, as illustrated in Fig. 5. Plate 11 plays two roles. It is used to mount the barrel into the housing and it provides a baffle for the lens within the barrel.

In order to accomplish the first role, the plate 11 in one embodiment is provided with cutouts or holes 5, 7 and 8 and/or has an outer perimeter shaped so that it can be gripped by an automated assembly tool (as shown in Fig. 10). Since the plate is attached to the barrel, the barrel can be thus manipulated during the assembly of the camera module. Alternatively, (or in addition) the plate is made of a magnetic or ferromagnetic material (e.g., a material that is attracted by a magnet) and can be engaged by a tool (as discussed at the bottom of page 16 and top of page 17 in the specification) for engagement and manipulation by a magnetic tool.

As discussed in the specification, the plate can also include an opening allowing light beams to reach the lenses in the barrel and a baffle. For example,

the plate has an inner hole with either two inner diameters, as shown in Figs. 6a and 6c or has a slanting inner wall as shown in Fig. 6b.

Claim 1 has been amended to emphasize that the assembling plate is separate from and therefore not integral with the barrel.

Claims 1-5 have been rejected as being obvious over Tanida in view of Michihiro. The Applicant respectfully traverses these rejections. More specifically, the Applicant takes issue with the Examiner's statement that Tanida teaches "a barrel (2) with external threads (10) on an external surface ...and an assembling plate mounted on an upper surface of the barrel " and that Tanida teaches "[a]n upper portion of the barrel (2) which does not contain threads comprises an assembly plate for adjusting the focus of the lens on the image sensor...." It is respectfully submitted Tanida teaches a camera module having a lens unit 2 with an integral mushroom shaped body having an enlarged head. Apparently, the examiner considers this enlarged head " an assembling plate." However claim 1 clearly recites "a magnetic assembling plate mounted to an upper surface of the barrel." Since in Tanida, the lens unit 2 is integral, there is no barrel having an upper surface and a separate assembling plate mounted on the upper surface as recited by the claim. This feature of the invention is further emphasized in claim 21 which recites that the barrel upper surface has an upper surface area and that the mounting plate has an area that does exceed the upper surface area. In order to be consistent, if the Examiner considers the head of the lens unit 2 to be "the assembling plate" then the lower portion of the lens unit 2 is the barrel. However this barrel does not have an upper surface area. And even

if it would have such an area, the area of the “assembling plate”, i.e., the enlarged head, would obviously be larger (because it is enlarged) than the area of the non-existing upper surface of the barrel.

In other words, claim 1 clearly recites two specific elements: a barrel with an upper surface and an assembling plate mounted on said barrel. Tanida teaches a mushroom shaped lens unit that is unitary and does not have a separate assembling plate as recited in the claim 1.

The Examiner admits that Tanida does not disclose a barrel with a magnetic assembling plate. The Examiner then relies on Michihiro as teaching (1) a lens barrel with an assembling plate; (2) that is magnetic. First, just like Tanida, Michihiro teaches a barrel having a unitary construction and does not teach a barrel having an upper surface and a separate assembling plate mounted on said upper surface. Once again, the Applicant disagrees with the Examiner’s statements. As discussed above and as emphasized in the claims, the camera module has a barrel with an upper surface and a separate assembling plate. Moreover, the Applicant further disagrees with the Examiner that Michihiro discloses a magnetic assembling plate. All that Michihiro states is that its barrel 4 and spacer 5 are made of an iron [sic] and nickel alloy. However, such an alloy is not necessarily magnetic. For example, note the following discussion about stainless steel (that is certainly an iron alloy) and nickel found at <http://www.physlink.com/Education/AskExperts/ae546.cfm>:

Stainless steels are a very broad group of metals. The name was adopted as a generic term for steel alloys with a minimum of 10.5% chromium. The chromium gives the steel its 'stainless' properties - essentially corrosion resistance. On the surface of the metal, a very thin chromium-rich oxide layer is formed which is inert - i.e. it prevents the steel from rusting. The advantage of stainless steels over plated steels is that, if scratched or damaged, the steel will 'self-repair' as a new oxide layer is formed. In plated steels, scratches in the plate will often lead to corrosion of the steel underneath.

In general, the higher the proportion of chromium, the stronger the corrosion resistance of the steel. In addition to chromium, other metals are added to give the steel particular properties such as strength and malleability. Specifically nickel is used to strengthen the oxide layer.

As for whether they are magnetic, the answer is that it depends. There are several families of stainless steels with different physical properties. A basic stainless steel has a 'ferritic' structure and is magnetic. These are formed from the addition of chromium and can be hardened through the addition of carbon (making them 'martensitic') and are often used in cutlery. However, the most common stainless steels are 'austenitic' - these have a higher chromium content and nickel is also added. It is the nickel which modifies the physical structure of the steel and makes it non-magnetic.

This discussion clearly illustrates that typically an iron alloy becomes non-magnetic when nickel is added. Michihiro selected this alloy for its thermal and not magnetic characteristics. Therefore, contrary to the Examiner's statements, the combination of Tanida and Michihiro does not teach a lens barrel with a magnetic assembling plate.

Claim 3 depends on claim 1 and further recites that the assembling plate is provided with an opening allowing light beams to the lens and a baffle arranged to prevent an incidence of undesired light beams to the lenses of the


barrel. Baffles performing this function are disclosed in the specification and the drawings. The Examiner takes the position that element 11 in Tanida is such a baffle. The Applicant disagrees. Tanida clearly states that element 11 is a light guide hole. It is respectfully submitted that at most the light guide hole corresponds to the opening in the assembling plate and that Tanida fails to provide a baffle to prevent an incidence of undesired light beams to the lenses of the barrel as recited in the claims.

Claim 5 recites that the assembling plate is attached to the upper surface of the barrel with an adhesive. The Examiner rejects this claim by taking Official Notice that adhesives are well known. The Applicant respectfully traverses this rejection because the Examiner completely ignores the tests promulgated for obviousness. These rules require the Examiner to compare the claimed elements to the prior art. The claimed element in question here is a barrel with an upper surface and an assembling plate mounted on the barrel's upper surface using an adhesive. The Applicants agree that it is well known to use an adhesive to bond two surfaces together. What the Examiner has failed to do is to provide any references that disclose a barrel with an upper surface and a separate assembling plate that needs to be mounted thereon. Without these references, the Examiner's rejection becomes meaningless. Since both references cited by the Examiner use a lens holder having a unitary construction there is no need to use an adhesive to do anything.

Claims 12- 15 are rejected as being anticipated by Akimoto alone or obvious in view of Akimoto in combination of the references disclosed above. In response, claim 12 has been amended to recite that the lens holder includes a barrel with a top surface and a separate assembling plate attached to said top surface. Just like the previous references, Akimoto discloses a unitary barrel for holding the lens and fails to provide a separate assembling plate that is flat, magnetic and is attached to the barrel to allow the barrel to be manipulated during assembly. It is therefore respectfully submitted that the subject application is patentably distindistinguishable over the references for the reasons given above.

It is respectfully submitted that the subject application is patentably distinguishable over the prior art of record and should be allowed.

Respectfully submitted,
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Dated: *December 19, 2007*